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ABSTRACT

Students who scored very high, very low, and average on the ACT test were compared on their responses to 48 items of six nonacademic achievement scales. The six categories were: leadership, music, drama and speech, art, writing, and science. Significant, though slight, relationships were found between academic ability and several specific nonacademic achievements. Some items within single scales were positively related to academic ability; others in the same scale were negatively related or not related. Some significant relationships for one sex were not significant for the other. The results implied that the relationship between academic talent and any nonacademic talent depends, at least in part, on the specific achievements chosen to define the talent. (Author/AF)

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WHO IS TALENTED? AN ANALYSIS OF ACHIEVEMENT

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Summary

Students who scored very high, very low, and average on the ACT tests were compared on their responses to 48 items of six nonacademic achievement scales. Significant, though slight, relationships were found between academic ability and several specific nonacademic achievements. Some items within single scales were positively related to academic ability; others in the same scale were negatively related or not related. Some significant relationships for one sex were not significant for the other. These results imply that the relationship between academic talent and any nonacademic talent depends, at least in part, on the specific achievements chosen to define the talent.

Who is Talented?
An Analysis of Achievement

Charles F. Elton and Linda R. Shevel

Because academic aptitude is both fairly easy to measure and positively related to grades and progress in school, talent, as traditionally defined, has been measured by indices of academic aptitude. However, the need for a broader definition of talent than was encompassed by academic aptitude was demonstrated first by MacKinnon (1960) and then by Hoyt (1966), who pointed out that college grades show little relationship to any measures of adult accomplishment. As a consequence, research efforts have accelerated to discover dimensions of talent which may be related to adult achievement. One crucial problem is the development of items and scales which measure these dimensions of talent. Once that is accomplished, the relationship between these dimensions of talent and talent as traditionally defined must be determined.

The question, How are academic and nonacademic abilities related?, has not yet been answered to everyone's satisfaction. Holland and Astin (1962) reported that academic and nonacademic achievements were essentially independent dimensions in a sample of undergraduates of superior scholastic aptitude. Holland and Richards (1965,1967a), using a representative sample of college-bound high school seniors, reported a negligible relationship between academic aptitude and achievement. Similar results were obtained by Richards, Holland, and Lutz (1967).

Subsequently, Werts (1967) showed that students earning A grades reported more nonacademic achievements from a scale of 18 items than did students earning C grades. Werts argued that academic and nonacademic achievements were indeed related, and that Holland and Richards failed to discover this relationship because of their use of correlational analysis with infrequent achievements. Holland and Richards (1967b) retabled Werts's data, showed how much talent was lost if selection procedures were based on grades alone, and argued that the relationship between academic and nonacademic talents was small or negligible even in Werts's data.

In their study of the relationship between academic and nonacademic achievement, Wallach and Wing (1969) concluded that responses to nonacademic achievement items are not related to differences in academic ability but are related to the style of cognitive functioning among Duke University freshmen. Since Wallach and Wing combined males and females for their item analyses, and since their low ability group is not representative of low ability students in the college population, their study is not entirely conclusive. (The average SAT score of the students in their low ability group was around 500.)

This study concerns an item analysis by sex of nonacademic achievement measures for representative groups of college students with diverse academic ability.

The Items. The items used in this study are part of the Student Profile Section of the regular ACT test battery and were used in the studies by Holland and Richards (1965,1967a). Talents in six areas of nonacademic achievement were measured by eight items in each of six scales. These items ranged from

common and less important accomplishments to rare and more important accomplishments. For example, science items included such accomplishments as "Performed an independent scientific experiment" and "Won a prize or award of any kind for scientific work or study." The student checked "Yes" (I have done this activity) or "No." Further information about these scales, their development, and their reliabilities can be found in Holland and Richards (1967a).

The Sample. The sample used for these analyses was a three percent sample of all students who took the regular test battery of The American College Testing Program on national test dates during 1966-67. This sample of approximately 22,000 was drawn by taking every 33rd, 67th and 100th student record from a population of 726,000. Men and women were sorted into High (HH) and Low (LL) groups. Male Highs included students scoring 24 or above on ACT English and 28 or above on ACT mathematics. Female Highs scored 26 or above on ACT English and 26 or above on ACT mathematics. Male Lows scored 12 or below on ACT English and 12 or below on ACT mathematics; female Lows were 14 or below on English, and 10 or below on ACT mathematics. The cutting scores for determining the High and Low groups were set at approximately one standard deviation above and below the national mean of each score for men and women. Thus, the students in the High group scored at least one standard deviation above the mean in both English and mathematics, and the students in the Low group scored at least one standard deviation below the mean in both tests. These groups included 6% of the men and 5% of the women (Highs: N = 723 men, 508 women; Lows: N = 726 men, 496 women). An Average (AA) group was also selected, consisting of males who scored from 13 to 23 on English, 13 to 27 in mathematics. The women scored 15 to 25 in English, 11 to 25 in mathematics. This group included 6,948 men, 59% of the male sample, and 6,487 women, 62% of the female sample.

Method. For each item on each nonacademic achievement scale, frequencies and percentages were computed for "Yes" and "No" responses, and for those not responding. The proportion of responders in each group (Highs, Lows, and Averages) answering "Yes" for each item was then computed, and the significance of the difference between these proportions for each sex was tested by constructing a standardized normal variable, ***z***. The numerator of this ***z*** was the proportion in the higher academic ability group responding "Yes" minus the proportion in the lower academic ability group responding "Yes." Hence, if ***z*** was positive, the proportion of "Yes" responders was greater in the upper ability group. Three comparisons were made. The Highs were compared with the Averages and Lows, and the Averages were compared with the Lows. The .01 level of confidence was chosen to test the significance of the difference between the proportions using a two-tailed test.

Results

First, the proportions of Highs and Lows responding "Yes" to each item were compared separately for men and women. Of 19 items on which the proportions of High and Low male responders differed significantly, the proportion of Highs was greater on 12 items. For women, the proportion of Highs responding "Yes" was greater on 8 of 15 significant items. There were no differences between the proportions for male groups on 29 of 48 items in the nonacademic achievement scales; on 33 of the 48 items there were no differences for women. The items, percentages responding "Yes" in each ability group, and the associated ***z*** statistics are shown in Table 1 for men, Table 2 for women.

Table 1

Differences in Item Response Between Ability Groups, Men

Item	Percent Yes			Z		
	HH	*AA*	*LL*	*HH–LL*	*HH–AA*	*AA–LL*
Leadership						
1. Appointed to a student office	36	32	30	2.18	2.35	.75
2. Actively campaigned to elect another student to a school office	37	37	43	−1.94	.34	−2.68*
3. Organized a school political group or campaign	12	11	20	−3.55*	.50	−4.48*
4. Participated in a nonschool political campaign	18	16	18	− .04	1.19	−1.03
5. Participated in a student movement to change institutional rules, procedures, or policies	35	31	27	2.86*	1.89	2.00
6. Initiated or organized a student movement to change institutional rules, procedures, or policies	9	9	17	−3.81*	− .28	−4.21*
7. Was elected to one or more student offices	45	33	31	4.85*	6.58*	.47
8. Received an award or special recognition for leadership (of any kind)	40	29	31	3.09*	6.00*	−1.19
Music						
1. Composed music	9	7	8	.51	1.83	− .89
2. Performed with a professional musical group (orchestra, band, choral group)	16	19	21	−2.29	−1.91	−1.35
3. Played in a school musical organization	33	26	22	4.07*	3.71*	1.93
4. Gave a public recital	20	19	18	.57	.30	.47
5. Gave music lessons	5	6	7	−1.32	−1.03	− .90
6. Played a musical instrument	49	40	32	5.51*	4.33*	3.25*
7. Received a rating of "Good" or "Excellent" in a state music contest	15	11	13	.71	2.75*	−1.36
8. Participated in a state music contest	19	12	10	4.34*	4.24*	1.73
Drama and Speech						
1. Placed first, second, or third in a regional or state speech or debate contest	5	3	5	− .21	2.80*	−2.40
2. Entered a school speech or debate contest	21	14	13	3.78*	4.43*	.81
3. Had leads in high school or church-sponsored plays	21	21	21	.04	.36	− .23
4. Gave a recital in speech	14	16	16	− .85	−1.46	.06
5. Wrote a play	6	5	7	− .32	1.17	−1.25
6. Had minor roles in plays (not high school or church-sponsored)	13	18	21	−3.30*	−3.74*	−1.40
7. Appeared on radio or TV as a performer	6	7	9	−1.81	−1.45	−1.15
8. Read for a part in high school play	25	22	21	1.52	1.68	.51
Art						
1. Finished a work of art (painting, ceramics, sculpture, etc.) on my own (not as part of a course)	17	24	21	−1.40	−4.05*	1.24

*$p < .01$

Table 1 (continued)

Item	Percent Yes			Z		
	HH	*AA*	*LL*	*HH–LL*	*HH–AA*	*AA–LL*
Art (continued)						
2. Exhibited a work of art at my school	7	16	21	−6.01*	−8.41*	−2.26
3. Exhibited a work of art in a statewide or regional show	2	5	7	−3.11*	−4.63*	−1.39
4. Exhibited a work of art in a city or county art show	4	7	8	−2.42	−3.55*	− .71
5. Won a prize or award in an art competition at my high school	1	3	6	−4.01*	−8.02*	−2.13
6. Won a prize or award in a statewide or regional artistic competition	1	2	4	−2.69*	−3.12*	−1.83
7. Won a prize or award in an art competition in a city-wide or county art show	2	3	4	−1.87	−2.04	−1.14
8. Had photographs, drawings, or other artwork published in a public newspaper or magazine	3	4	6	−2.29	−1.87	−1.64
Writing						
1. Edited a school paper or yearbook	11	7	12	− .19	3.28*	−2.58*
2. Edited a school literary magazine	2	2	4	−1.97	.61	−2.50
3. Had poems, stories, essays, or articles published in a school publication	30	19	13	6.46*	5.57*	3.22*
4. Wrote an original but unpublished piece of creative writing on my own (not as part of a course)	39	28	17	7.69*	5.14*	5.24*
5. Had poems, stories, or articles published in a public newspaper or magazine (not school paper) or in a state or national high school anthology	7	5	4	1.77	1.58	.85
6. Won literary award or prize for creative writing	5	2	3	1.80	3.73*	−1.03
7. Work of creative writing published in a public magazine or book	1	1	2	−1.08	.64	−1.56
8. Work of creative writing published in a school literary magazine or newspaper	13	7	10	1.48	4.01*	−1.30
Science						
1. Wrote an independent paper on a scientific topic which received the highest possible mark in my school	9	6	13	−1.59	2.81*	−3.52*
2. Did an independent scientific experiment (not as part of a course)	38	31	26	3.58*	3.45*	1.69
3. Built a piece of equipment or laboratory apparatus on my own (not as part of a course)	27	21	23	1.23	3.18*	− .86
4. Participated in a National Science Foundation summer program for high school students	5	1	5	− .32	4.19*	−2.99*
5. Won a prize or award (of any kind) for scientific work or study	18	11	11	2.98*	4.38*	.05
6. Placed first, second, or third in a regional or state science contest	6	2	5	.68	3.48*	−1.76
7. Placed first, second, or third in a school science contest	13	9	7	2.75*	3.07*	.88
8. Participated in a scientific contest or talent search	21	15	16	1.71	3.28*	− .43

Table 2

Differences in Item Response Between Ability Groups, Women

Item	Percent Yes			Z		
	HH	*AA*	*LL*	*HH–LL*	*HH–AA*	*AA–LL*
Leadership						
1. Appointed to a student office	39	39	33	1.60	– .01	2.06
2. Actively campaigned to elect another student to a school office	42	45	49	–1.76	–1.08	–1.32
3. Organized a school political group or campaign	10	10	17	–3.17*	.04	–3.73*
4. Participated in a nonschool political campaign	16	17	14	.65	– .78	1.50
5. Participated in a student movement to change institutional rules, procedures, or policies	32	33	25	2.13	– .65	3.31*
6. Initiated or organized a student movement to change institutional rules, procedures, or policies	5	8	13	–3.49*	–2.24	–2.66*
7. Was elected to one or more student offices	52	43	39	3.71*	3.88*	1.45
8. Received an award or special recognition for leadership (of any kind)	44	32	31	3.84*	5.49*	.24
Music						
1. Composed music	5	4	8	–1.49	.55	–2.09
2. Performed with a professional musical group (orchestra, band, choral group)	19	30	33	–4.34*	–5.65*	–1.28
3. Played in a school musical organization	36	32	29	1.83	1.46	1.11
4. Gave a public recital	27	30	23	1.25	–1.19	2.55
5. Gave music lessons	6	6	7	– .22	.30	– .50
6. Played a musical instrument	58	48	38	5.50*	4.30*	3.44*
7. Received a rating of "Good" or "Excellent" in a state music contest	19	15	15	1.59	2.11	.25
8. Participated in a state music contest	22	17	13	3.17*	2.51	1.88
Drama and Speech						
1. Placed first, second, or third in a regional or state speech or debate contest	7	4	7	– .16	2.26	–1.85
2. Entered a school speech or debate contest	21	16	20	.45	2.50	–1.39
3. Had leads in high school or church-sponsored plays	22	25	31	–2.58*	–1.57	–1.98
4. Gave a recital in speech	9	14	16	–2.55	–2.94*	–1.11
5. Wrote a play	7	7	11	–1.66	– .22	–1.79
6. Had minor roles in plays (not high school or church-sponsored)	18	22	29	–3.21*	–2.50	–2.39
7. Appeared on radio or TV as a performer	9	9	8	.24	– .36	.57
8. Read for a part in high school play	38	35	36	.37	1.16	– .42
Art						
1. Finished a work of art (painting, ceramics, sculpture, etc.) on my own (not as part of a course)	30	34	28	.44	–1.75	1.84

*$p < .01$

Table 2 (continued)

Item	Percent Yes			Z		
	HH	*AA*	*LL*	*HH–LL*	*HH–AA*	*AA–LL*
Art (continued)						
2. Exhibited a work of art at my school	17	20	27	−3.02*	−1.73	−2.38
3. Exhibited a work of art in a statewide or regional show	3	5	7	−1.78	−1.32	−1.31
4. Exhibited a work of art in a city or county art show	7	8	13	−2.38	− .85	−2.21
5. Won a prize or award in an art competition at my high school	2	3	6	−2.17	−1.19	−1.85
6. Won a prize or award in a statewide or regional artistic competition	2	2	2	− .58	− .04	− .65
7. Won a prize or award in an art competition in a city-wide or county art show	3	3	4	−1.14	− .83	− .85
8. Had photographs, drawings, or other artwork published in a public newspaper or magazine	3	3	6	−1.88	− .06	−2.06
Writing						
1. Edited a school paper or yearbook	19	14	16	.99	2.76*	− .87
2. Edited a school literary magazine	2	2	7	−2.59*	.47	−2.93*
3. Had poems, stories, essays, or articles published in a school publication	43	30	21	6.04*	5.26*	3.24*
4. Wrote an original but unpublished piece of creative writing on my own (not as part of a course)	55	42	25	7.88*	4.97*	5.77*
5. Had poems, stories, or articles published in a public newspaper or magazine (not school paper) or in a state or national high school anthology	11	7	8	1.06	2.82*	− .88
6. Won literary award or prize for creative writing	6	3	4	1.27	2.70*	− .59
7. Work of creative writing published in a public magazine or book	2	1	4	−1.09	1.75	−2.13
8. Work of creative writing published in a school literary magazine or newspaper	21	12	11	3.45*	4.59*	.48
Science						
1. Wrote an independent paper on a scientific topic which received the highest possible mark in my school	6	3	6	.46	2.90*	−1.48
2. Did an independent scientific experiment (not as part of a course)	21	17	25	−1.12	1.71	−2.36
3. Built a piece of equipment or laboratory apparatus on my own (not as part of a course)	4	4	6	−1.04	− .26	−1.04
4. Participated in a National Science Foundation summer program for high school students	2	1	4	− .95	2.45	−2.26
5. Won a prize or award (of any kind) for scientific work or study	17	9	9	2.64*	4.35*	− .28
6. Placed first, second, or third in a regional or state science contest	4	2	3	.96	2.62*	− .85
7. Placed first, second, or third in a school science contest	11	7	8	.95	2.25	− .49
8. Participated in a scientific contest or talent search	19	13	17	.74	3.14*	−1.31

There were no differences in the proportions of either men or women who answered "Yes" to three Leadership items: "Appointed to a student office," "Actively campaigned to elect another student to a school office," and "Participated in a nonschool political campaign." Yet, the Leadership scale included the most items for which both men and women differed in the proportion of "Yes" responses. The proportions responding "Yes" to "Participated in a student movement to change institutional rules, procedures, or policies," "Was elected to one or more student offices," and "Received an award or special recognition for leadership (of any kind)," were significantly different for men; all of these except the first item were significantly different in the same direction (favoring the Highs) for women. For both men and women "Organized a school political group or campaign," and "Initiated or organized a student movement to change institutional rules, procedures, or policies" were significant and negative. In other words, more low ability men and women accomplished these achievements than did high ability students.

The music scale contained four items for which the proportions were not significantly different for either men or women: "Composed music," "Gave a public recital," "Gave music lessons," and "Received a rating of Good or Excellent in a state music contest." For men only, "Played in a school musical organization" was significant in the direction of the Highs. "Performed with a professional musical group (orchestra, band, choral group)" was significant in favor of the Lows for women. Two items significantly favored the Highs for both sexes: "Played a musical instrument," and "Participated in a state music contest."

Five of the eight items on the Drama and Speech scale were independent of ability differences between the Highs and Lows. There were two items on which the ability groups differed significantly for men. The proportion of Highs responding "Yes" to "Entered a school speech or debate contest" was greater than the proportion of Lows responding "Yes" to that item. A greater proportion of Lows answered "Yes" to "Had minor roles in plays (not high school or church-sponsored)." This item was also answered "Yes" by a significantly larger ratio of Low women. Another item on which there was a significant difference for women only favored the Lows: "Had leads in high school or church-sponsored plays."

There were no differences in the two ability groups for four items on the Art scale. Four items showed significant differences in the proportions of Highs and Lows responding "Yes." All of these differences favored the Low group. The items were: "Exhibited a work of art at my school" (both sexes), "Exhibited a work of art in a statewide or regional show" (men), "Won a prize or award in an art competition at my high school" (men), and "Won a prize or award in a statewide or regional artistic competition" (men).

Half of the items on the Writing scale showed no significant differences between the Highs and Lows for either sex: "Edited a school paper or yearbook," "Had poems, stories, or articles published in a public newspaper or magazine (not a school paper) or in a state or national high school anthology," "Won literary award or prize for creative writing," and "Work of creative writing published in a public magazine or book." The Writing scale contained one item favoring the Lows on which the two ability groups differed significantly for women: "Edited a school literary magazine." The Highs responded "Yes" more frequently to "Had poems, stories, essays, or articles published in a school publication," and "Wrote an original but unpublished piece of creative writing on my own (not as part of a course)." These

differences were significant for both men and women. For women only, the proportion of "Yes" responders to the item, "Work of creative writing published in a school literary magazine or newspaper," was significantly different in favor of the Highs.

Five items on the Science scale were unrelated to High and Low academic ability differences. All significant differences for both men and women on this scale favored the High group. Male Highs answered "Yes" more frequently to "Did an independent scientific experiment (not as part of a course)" and "Placed first, second, or third in a school science contest." For both sexes, the item, "Won a prize or award (of any kind) for scientific work or study," was significantly different.

Tables 1 and 2 also show the results of the High versus Average and Average versus Low comparisons. There were more items on which there were differences when High and Average groups were compared than when High and Low groups were compared. Of the 28 items on which there were significant differences between the proportions of "Yes" responders in the High and Average groups of men, 21 of the *z*'s were positive. Thirteen of fifteen significant differences were positive for women in these groups. However, it is important to remember that there were 20 items for men and 33 items for women on which the two groups were not significantly different. These items, and the items which favored the Average groups, measured important accomplishments.

The Average versus Low comparisons found fewer significant differences. There were only 9 of 48 items on which the difference in proportions responding "Yes" was significant for men. Of these items, three *z*'s were positive. For women, there were three of six significant *z*'s that were positive.

Table 3 shows the number of items in each scale for which there were significant differences between any two ability groups and the number of items on which there were no differences. A larger number of significant differences occur between the High and Average ability groups than between the High and Low ability groups. Few items show significant differences in the Average-Low ability comparisons. These analyses illustrate that the relationships between academic ability and nonacademic achievements are tenuous and sometimes complex rather than linear.

Table 3

Distribution of Significant Item Differences by Ability

	HH–LL comparison						*HH–AA comparison*						*AA–LL comparison*					
	Favor highs		Favor lows		No diff		Favor highs		Favor aves		No diff		Favor aves		Favor lows		No diff	
Scales	*M*	*W*	*M*	*W*	*M*	*W*	*M*	*W*	*M*	*W*	*M*	*W*	*M*	*W*	*M*	*W*	*M*	*W*
Leadership	3	2	2	2	3	4	2	2	0	0	6	6	0	2	3	1	5	5
Music	3	2	0	1	5	5	4	1	0	1	4	6	1	1	0	0	7	7
Drama	1	0	1	2	6	6	2	0	1	1	5	7	0	0	0	0	8	8
Art	0	0	4	1	4	7	0	0	6	0	2	8	0	0	0	0	8	8
Writing	2	3	0	1	6	4	5	6	0	0	3	2	2	2	1	1	5	5
Science	3	1	0	0	5	7	8	4	0	0	0	4	0	0	2	0	6	8

Discussion

Tables 1 and 2 show that academic ability may be positively or negatively related (or, more typically, not related at all) to the percent of respondents answering "Yes" to specific items on the nonacademic achievement scales. There were no differences between the percentages of students from various academic ability groups responding "Yes" to a number of items which measure important and sometimes rare achievements. Examples of achievement items on which the differences between any two groups for either sex were not significant follow: Leadership, "Appointed to a student office"; Music, "Composed music"; Drama and Speech, "Wrote a play"; Art, "Won a prize or award in an art competition in a city-wide or county art show"; Writing, "Work of creative writing published in a public magazine or book." The items which were not differentially answered by High and Low ability groups in our sample were distributed throughout all six areas of achievement as shown in Table 3.

Each of these items represents an important nonacademic accomplishment which is socially desirable and which may be presumed to be related to later life achievement (Richards, Holland, & Lutz, 1967). When the extreme nature of these ability groups is taken into account, this result is astonishing. It shows the existence of many talented people whose academic talent is limited.

On 19 items for males and 15 items for women significant differences were found between the proportions of Highs and Lows responding "Yes." These item differences sometimes favored high ability students and at other times favored those with low ability (see Tables 1 and 2). Even within an area of achievement, no definitive statement about the relationship between academic ability and achievement can be made. Sex differences were also apparent in the ratio of high or low ability students who responded "Yes." In Art, for example, only one item was significant for women. On four items there were significant differences for men. In Drama and Speech, there were two items for both men and women on which there were significant differences. "Had minor roles in plays (not high school or church-sponsored)" was significant and negative for both men and women. But "Entered a school speech or debate contest" was positive and significant for men only; "Had leads in high school or church-sponsored plays" was negative and significant for women only.

The items on which there were significant differences vary considerably in their difficulty. For example, "Was elected to a student office," a Leadership item, was answered "Yes" by a significantly higher proportion of high ability males and females; 45% of High men and 31% of Low men, 52% of High women and 39% of Low women responded "Yes." "Edited a school literary magazine" was a very difficult item in Writing. Only 2% of High women and 7% of Low women were able to answer "Yes" to this item. This percentage difference was significant for women.

The significance of the difference between proportions needs to be interpreted with caution. A difference of only 2% may be statistically significant for small proportions when the Average group is involved in the comparison. That degree of difference may have little practical importance. Also, due to the extreme nature of our ability groups, a significant item may still have an almost negligible correlation with academic ability. Whenever a series of tests are performed the probability of finding a significant

result by chance alone becomes great. These results are subject to that criticism. As a result of performing many tests, we might have found ***more*** significant differences than actually exist. That is, the academic ability groups may be more alike in achievement than these results indicate.

The nature of the sample affects the generalization of these results. Because students who took the ACT battery were sampled, the Lows might have been an unusually talented group of students. They were considerably below average in academic ability; yet, they were probably considering college attendance. Going to college may have represented the means for furthering the development of their talent, or scholarships may have been awarded by colleges because of their talent. The possibility of a confounding response bias also exists. That is, low ability students to a greater degree than high ability students might have "put their best foot forward."

The data in this study help our understanding of the divergent interpretations of the data in the Holland and Richards (1965, 1967a) and Werts (1967) studies. Holland and Richards, although they did perform some item analyses (1965), usually correlated the total number of items answered "Yes" in each achievement area with measures of academic ability and found a minimal relationship between these variables. This outcome would be expected if a greater proportion of students with low academic ability answered "Yes" to particular nonacademic achievement items while a greater proportion of students with high academic ability answered "Yes" to different achievement items. Werts's findings would be expected if his nonacademic achievement items were similar to items which are differentially answered by high-ability students. An exact comparison was not possible between the items used by Werts and those in this study, although partial comparisons could be made. For example, in the area of Science, two of the three items used by Werts were similar to the ACT items and these two items were differentially answered "Yes" by high ability students. Crude comparisons of this type lead to the conclusion that 10 of the 18 items used by Werts were those answered "Yes" by a higher percent of high ability students. Despite these differences from study to study, the relationships were nearly always low or negligible whatever estimating technique was used.

Wallach and Wing (1969) found significant differences between their high and low ability groups for only 4 of 34 achievement items. They concluded: "First of all, high versus low intelligence status in our sample . . . is clearly ***not*** related to attainments in any of the nonacademic domains that we have studied. High versus low intelligence status also is quite unrelated to generality of nonacademic accomplishments across the various domains as a whole. These statements hold for the college student sample in general—they are as true for the members of one sex as for the members of the other."

Again, exact comparison of the items used in the Wallach and Wing study and those used in this one is not possible. Several characteristics of their study should be mentioned, however. Their low ability group had average SAT scores of approximately 500. "Equating" ACT scores to SAT, those in this study had average SAT scores of approximately 325. Furthermore, the Wallach and Wing achievement item analysis combined male and female responses within high-low ability comparisons, thus concealing potential sex differences in item preference.

Several implications emerge from these results. First, national programs of talent assessment need not discriminate against students with low academic aptitude. Whether or not the assessment program discriminates against low academic ability students depends upon the breadth of talent included in the assessment battery. As the nonacademic items in the ACT battery demonstrate, academic aptitude is unrelated to such important accomplishments as composing music, writing plays, or winning awards in the areas of art, literature, or science.

Second, these results have implications for college selection practices. To select college applicants on the basis of academic ability alone is to reject many students who are talented—many who are likely to achieve in art and many who have had experience in professional or community music and drama productions, for example. Academic measures assess academic potential much more efficiently than nonacademic potential; nonacademic measures assess certain important accomplishments more effectively than do academic measures.

Third, if a scale measuring nonacademic talent is to be constructed, the type of item chosen is of great importance. The items determine the degree and direction of correlation with academic ability. The area of nonacademic talent is less important in determining the relationship. That is, if items included in a leadership scale ask about organizing groups of people for special purposes or about nonschool political activities, the scale will correlate negatively (if at all) with measures of academic ability. On the other hand, should the items ask about being elected to school offices, the correlation between academic ability and the scale might be positive. Thus, correlations between item responses and measures of academic ability provide information about the nature of the items. Generalizations from specific items or scales to the nature of general ability should be made only with considerable care.

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